

Your aquarium is no longer functioning. You decide to get rid of the fish. You should...

- a) Flush them down the toilet. (0 points)
- b) Give them to someone who will enjoy them. (3 points)
- c) Release them in a small local pond. (-1 points)

How many of these organisms are considered aquatic nuisance species: Carp, Hydrilla, Feral Pig, Bullfrog.

- a) One (1 point)
- b) Three (2 points)
- c) All Four (3 points)

How many of these organisms are considered non-native: Tomatoes, Wheat, Chickens, Goldfish.

- a) None (0 points)
- b) Two (2 points)
- c) All Four (3 points)

What impact does Didymo (rock snot) have on the aquatic environment?

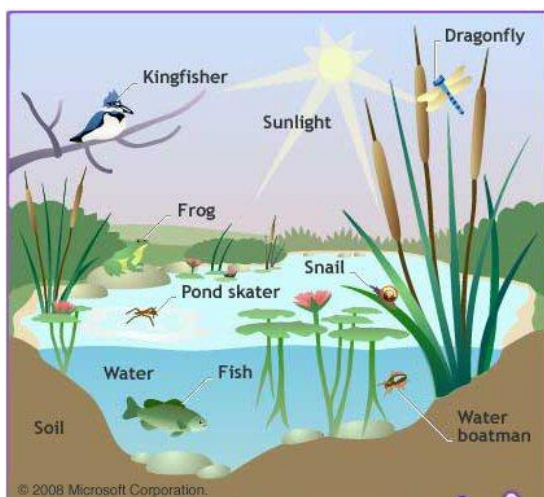
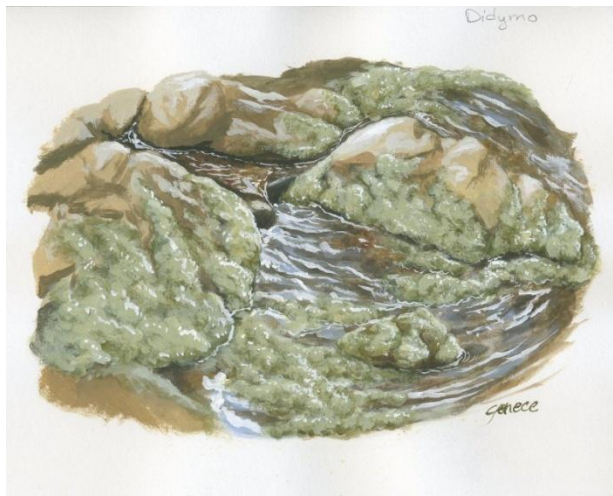
- a) It has no real impact. (0 points)
- b) It can completely smother native plants, insects, mollusks and algae. (3 points)
- c) It looks GROSS! (1 point)

How can you gain information about aquatic nuisance species in your area?

- a) Contact the ANS Task Force. (1 point)
- b) Complete an internet search on the topic. (1 point)
- c) Both a and b. (3 Points)

In any ecosystem, there is a limited amount of resources. If an introduced species does well in a new ecosystem, that usually means native species are

- a) Getting more resources than before. (0 points)
- b) Getting the same amount of resources than before. (0 points)
- c) Getting fewer resources than before. (3 points)



To prevent the transfer of aquatic nuisance species from one water body to another, you should

- a) Pull your boat quickly from one lake to another. (-1 point)
- b) Carefully inspect and clean your boat, trailer and equipment. (3 points)
- c) Pour any unused bait into the water before leaving. (-1 point)

Bringing in grass carp may be a way to handle nuisance aquatic plants such as Hydrilla. What is a potential problem with this idea?

- a) Hydrilla would decrease. (0 points)
- b) Grass Carp may eat native plant species when the Hydrilla is gone. (3 points)
- c) Native plants would repopulate the area. (0 points)

You find a beautiful plant while on vacation in Mexico. Do you

- a) Take a picture? (3 points)
- b) Dig it up and transplant it in your garden? (-1 points)
- c) Pick the flowers off of it? (0 points)

Zebra Mussels have been found in densities as great as

- a) 30,000 mussels/m<sup>2</sup> (1 point)
- b) 100,000 mussels/m<sup>2</sup> (1 point)
- c) 750,000 mussels/m<sup>2</sup> (3 points) (Schloesser, Nalepa and Mackie 1996)

Which aquatic nuisance species was introduced to Oregon as a food item in the 1900's?

- a) Nutria (0 points)
- b) Bullfrog (3 points)
- c) Grass Carp (0 points)

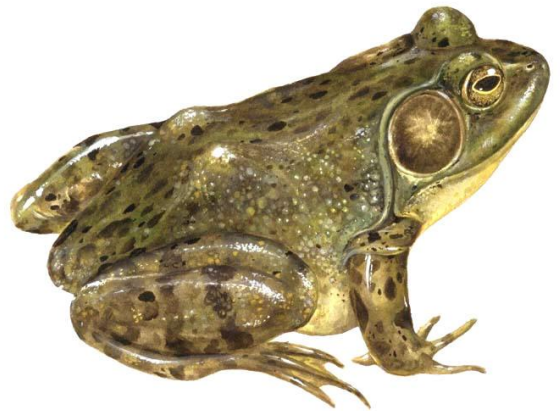
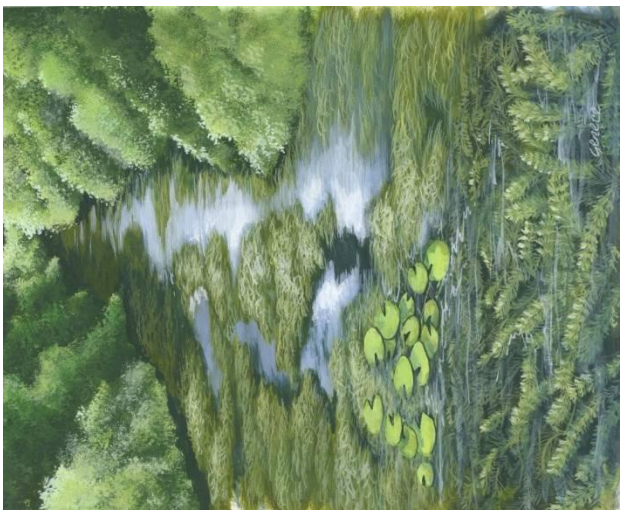
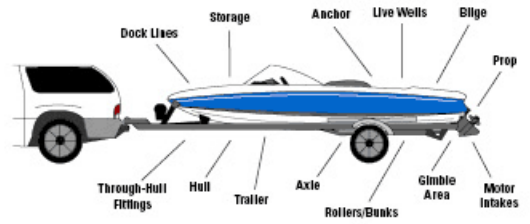
Introduced species are

- a) Rare organisms. (0 points)
- b) Organisms brought into a new environment not their own. (3 points)
- c) Worth a lot of money. (0 points)

Grass Carp



Before launching and before leaving...  
**Inspect everything!**



You find some New Zealand mudsnail on a rock along the Columbia River. You should

- a) Leave them where they are and report your find to the ANS Task Force. (3 points)
- b) Take them home and report your find to the ANS Task Force. (1 point)
- c) Put them in a pond near your home. (-1 point)

How did the Red-eared slider (turtle) make its way into Washington State?

- a) By traveling in the ballast water of commercial freighters. (0 points)
- b) They walked here on their own (volitional movement). (0 points)
- c) They were bought as pets and illegally released into the wild. (3 points)

Native or Indigenous plants and animals are those

- a) That are naturally found in an ecosystem. (3 points)
- b) Are imported into an ecosystem. (0 points)
- c) Make you sick if you eat them. (1 point)

What impact does Hydrilla have on the aquatic environment?

- a) Improves water quality. (0 points)
- b) Increases water flow in rivers and streams. (0 points)
- c) Crowds out native vegetation and disrupts the food chain. (3 points)

The effect Zebra Mussels have on water intake pipes is to

- a) Help rebuild them. (0 points)
- b) Clog them. (3 points)
- c) Clean them. (0 points)

Aquatic nuisance species are

- a) Plants (1 point)
- b) Animals (1 point)
- c) Pathogens (1 point)
- d) All of the above (3 points)



Purple loosestrife was brought into the United States

- a) To stabilize stream banks. (0 points)
- b) For landscaping and medicinal uses. (3 points)
- c) To feed herbivores. (0 points)

True or False. All introduced species are bad.

- a) True (0 points)
- b) False (3 points)

Which trait is common to aquatic nuisance species?

- a) They grow very slowly. (0 points)
- b) They are habitat generalists. (3 points)
- c) They produce few offspring. (0 points)

Introduced species

- a) Are good for the environment they enter. (1 point)
- b) Are bad for the environment they enter. (1 point)
- c) Can be either good or bad, and some have no effect. (3 points)

How much vegetation does a Nutria consume daily

- a) 25% of its body weight. (3 points)
- b) 50% of its body weight. (0 points)
- c) 75% of its body weight. (0 points)

Which ANS reproduces by cloning itself?

- a) Rock snot (0 points)
- b) Chinese mitten crab (0 points)
- c) New Zealand mudsnail (3 points)



## PREVENT THE SPREAD OF INVASIVE SPECIES IT'S THE LAW !

### PROHIBITED ACTIONS INCLUDE:

- Launching a boat into a waterbody with any visible plants or animals attached to the boat, trailer, or other equipment.
- Entering a public highway with any visible plants or animals attached to the boat, trailer, or other equipment.
- Introducing an aquatic invasive species to any waterbody by any other means.

**Maximum penalty for violation  
\$5,000 fine and 15 days jail**

County of Warren Local Law No. 9 of 2011



**STOP AQUATIC HITCHHIKERS!**  
PREVENT THE SPREAD OF INVASIVE SPECIES. IT'S THE LAW

☒ CLEAN

☒ DRAIN

☒ DRY

New Zealand Mudsail



Boaters and outdoor enthusiasts can prevent the spread of ANS by

- a) Wearing a life jacket. (0 points)
- b) Carefully inspecting and cleaning boats, trailers and equipment before leaving the water. (3 points)
- c) Draining water from boat and emptying bait buckets on dry land only. (3 points)

The Chinese Mitten crab

- a) Is the only crab in North America that spends most of its life in freshwater. (1 point)
- b) Juveniles can migrate upstream several hundred miles on water and land. (1 point)
- c) Create burrows that damage stream banks and water control levees. (1 point)
- d) All of the above. (3 points)

A female zebra mussel can produce up to

- a) 10,000 eggs a year. (0 points)
- b) 100,000 eggs a year. (1 point)
- c) 1 million eggs a year. (3 points)

What percentage of all introduced species ever become a nuisance or invasive?

- a) 1% (3 points)
- b) 5% (0 points)
- c) 10% (0 points)

What is the best and most cost effective measure to combat the spread of ANS?

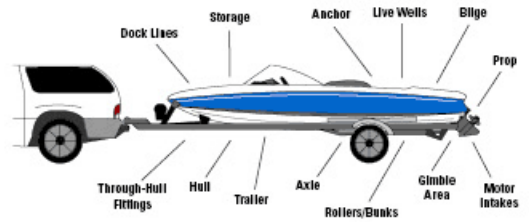
- a) Chemically treat the water with a pesticide. (0 points)
- b) Public education. (3 points)
- c) Pull them all out by hand. (0 points)

Why do ANS do so well in their new environment?

- a) They lack predators and other population controls. (3 points)
- b) They are habitat specialists. (0 points)
- c) They are more adapted to urban environments. (0 points)



Before launching and before leaving...  
**Inspect everything!**



## PREVENT THE SPREAD OF INVASIVE SPECIES IT'S THE LAW !

### PROHIBITED ACTIONS INCLUDE:

- Launching a boat into a waterbody with any visible plants or animals attached to the boat, trailer, or other equipment.
- Entering a public highway with any visible plants or animals attached to the boat, trailer, or other equipment.
- Introducing an aquatic invasive species to any waterbody by any other means.

**Maximum penalty for violation  
 \$5,000 fine and 15 days jail**

County of Warren Local Law No. 9 of 2011



**STOP AQUATIC HITCHHIKERS!**  
 PREVENT THE SPREAD OF INVASIVE SPECIES. IT'S THE LAW

☒ CLEAN ☒ DRAIN ☒ DRY



**STOP AQUATIC  
 HITCHHIKERS!™**

How do most foreign aquatic nuisance species first reach the United States?

- a) By seaplane (0 points)
- b) On migrating birds (0 points)
- c) In ballast water of commercial freighters (3 points)

Hydrilla has the potential to completely choke out a body of water. How is it spread?

- a) By fragments attached to boats or trailers. (3 points)
- b) By passing through the digestive tract of grass carp. (0 points)
- c) By landscapers. (0 points)

The total estimated economic cost dealing with terrestrial and aquatic nuisance species in the United States is

- a) \$500 Million (0 points)
- b) \$25 Billion (0 points)
- c) \$100 Billion (3 points)

How are most ANS spread once they get to the United States?

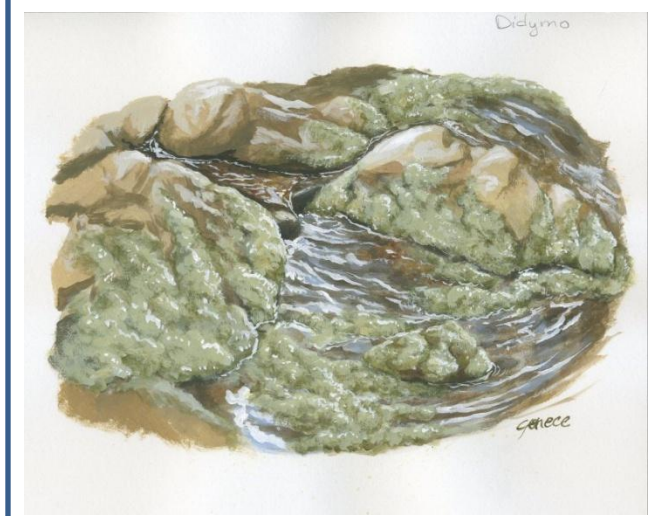
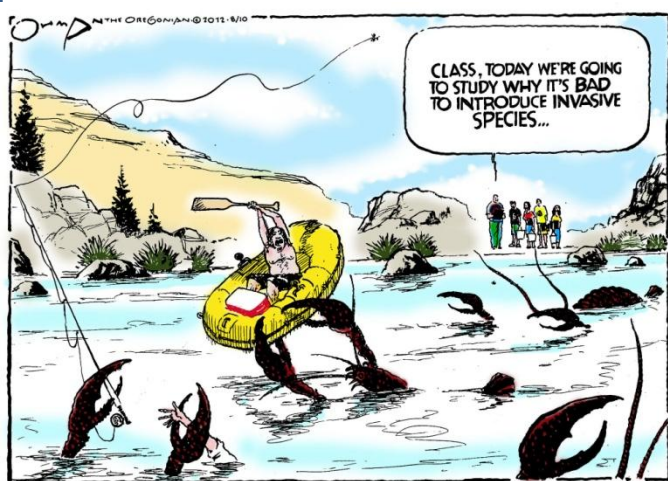
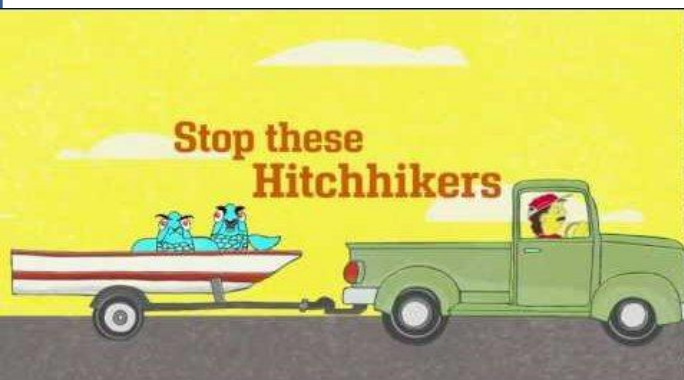
- a) Through human activities. (3 points)
- b) They float, swim or crawl from one water body to another. (1 points)
- c) They never spread from their point of origin. (0 points)

True or False. The introduction of a single cell of Didymo is enough to start a population in a new area.

- a) True (3 points)
- b) False (0 points)

Aquatic nuisance species

- a) Are usually native species. (0 points)
- b) Are economically beneficial. (0 points)
- c) Have a harmful impact on the aquatic environment. (3 points)



Adult bullfrogs will eat

- a) Snakes (1 point)
- b) Crayfish (1 point)
- c) Their own young (1 point)
- d) Anything they can catch and swallow (3 points)

Aquatic nuisance species

- a) Compete with native species for food, space and shelter. (3 points)
- b) Increase the quality of aquatic habitat. (0 points)
- c) Increase the diversity and abundance of native fish, plant and insect species. (0 points)

How much vegetation can a single adult grass carp eat daily?

- a) Up to two times its own body weight. (1 point)
- b) Up to three times its own body weight. (3 points)
- c) Up to five times its own body weight. (0 points)

How many of these ANS were intentionally introduced to the United States: Common Carp, Quagga Mussel, Chinese Mitten Crab, and Didymo.

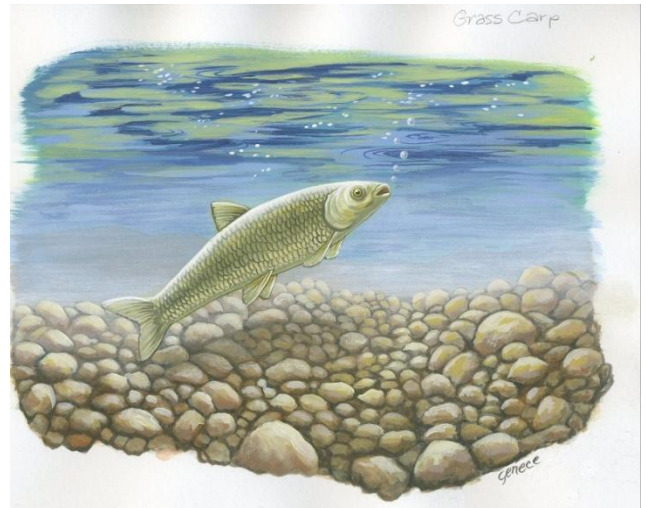
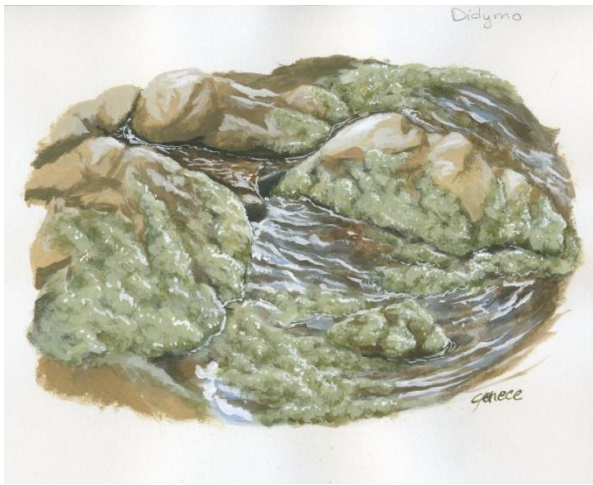
- a) Two (3 points)
- b) Three (0 points)
- c) Four (0 points)

According to the Convention of Biological Diversity, invasive/nuisance species have been the cause of approximately what percentage of all animal extinctions?

- a) 10 (0 points)
- b) 40 (3 points)
- c) 70 (0 points)

What can people do to prevent the spread of aquatic nuisance species?

- a) Remove vegetation and organisms from boat before leaving area. (1 point)
- b) Dry boat and equipment for 5 days before launching into a new water body. (1 point)
- c) Wash and rinse the boat, motor and trailer. (1 point)
- d) Learn to identify aquatic invasive species. (1 point)
- e) All of the above. (3 points)



**STOP AQUATIC  
HITCHHIKERS!™**



Why do most people care about the spread of aquatic nuisance species?

- a) ANS can harm recreation, the environment and the economy. (3 points)
- b) ANS can help control pest populations. (0 points)
- c) ANS make interesting pets. (-1 points)

Why is the threat of invasive/nuisance species in the United States greater than it may have been in the past?

- a) Habitats in the united states have changed to resemble habitats in other parts of the world. (0 points)
- b) Fewer native species currently live in the United States, allowing more invasive/nuisance species to thrive. (0 points)
- c) International travel allows species to be more easily introduced to our ecosystems. (3 points)

When is the best time for cleaning your boat (or other recreational gear) to prevent the spread of aquatic nuisance species?

- a) Before you leave the ramp area. (3 points)
- b) When you get back home. (1 point)
- c) Prior to launching at a different waterway. (0 points)

# PREVENT THE SPREAD OF INVASIVE SPECIES IT'S THE LAW !

## PROHIBITED ACTIONS INCLUDE:

- Launching a boat into a waterbody with any visible plants or animals attached to the boat, trailer, or other equipment.
- Entering a public highway with any visible plants or animals attached to the boat, trailer, or other equipment.
- Introducing an aquatic invasive species to any waterbody by any other means.

**Maximum penalty for violation**  
**\$5,000 fine and 15 days jail**

County of Warren Local Law No. 9 of 2011



**STOP AQUATIC HITCHHIKERS!**  
PREVENT THE SPREAD OF INVASIVE SPECIES. IT'S THE LAW

☒ CLEAN ☒ DRAIN ☒ DRY

### Colonization

Filter #1: Can invader colonists reach the new ecosystem?



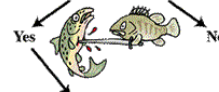
### Establishment

Filter #2: Can a self-sustaining population of the invader become established?



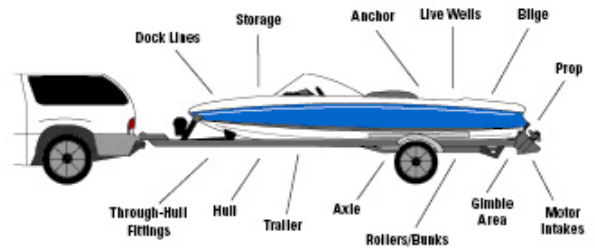
### Impact

Filter #3: Will there be adverse impacts on native biota?



**Vulnerable;  
high priority lake**

Before launching and before leaving...  
**Inspect everything!**



**BONUS** - part of the Zebra mussel's scientific name is "polymorpha" which means?

- a) Many young. (0 points)
- b) Many forms. (3 points)
- c) Many habitats. (0 points)

Which species of Asian Carp can weigh over 150 pounds and has human-like molars in its throat to crush the shells of mussels and snails?

- a) Grass Carp. (0 points)
- b) Common Carp. (0 points)
- c) Black Carp. (3 points)

Viral Hemorrhagic Septicemia (VHS) is an infectious disease of fish that causes...?

- a) The fish to swim in circles. (0 points)
- b) Bleeding in the eyes, skin, gills, fins and internal organs. (3 points)
- c) Skeletal deformations. (0 points)

A species that occurs in an environment naturally is called a...

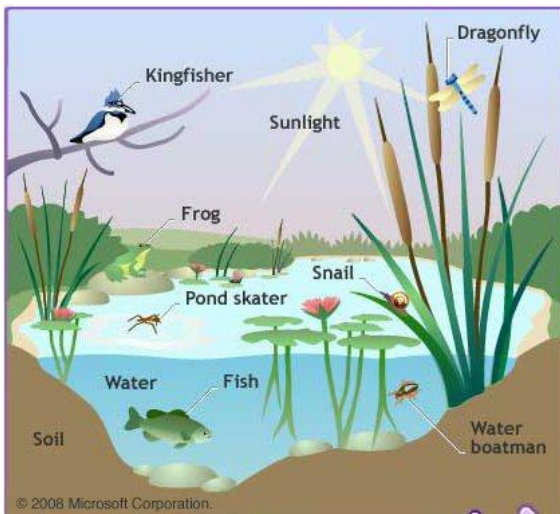
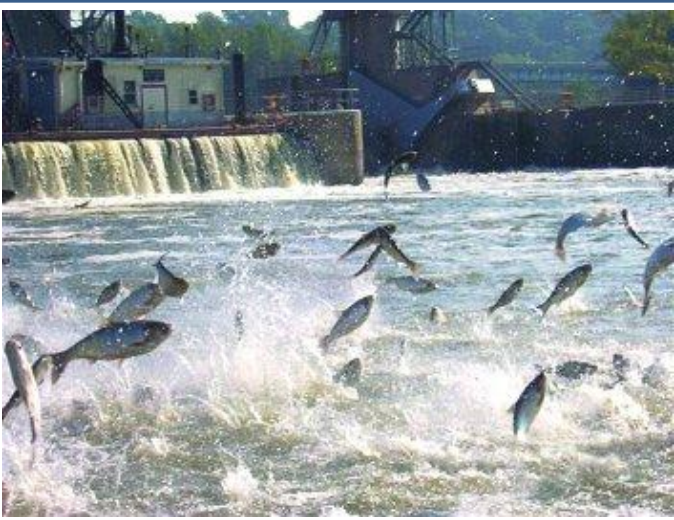
- a) Exotic species. (0 points)
- b) Native Species. (3 points)
- c) Natural Species. (0 points)

How did the Asian Carp find its way to the United States?

- a) They were imported to control pests and vegetation. (3 points)
- b) They hitchhiked in cargo-ship ballast water that was emptied into the Mississippi. (0 points)
- c) They accidentally escaped from large aquariums. (0 points)

How can you prevent the spread of ANS?

- a) Plant native species in your backyard. (1 point)
- b) Clean recreational boats and gear before leaving a body of water. (1 point)
- c) Leave plants and animals where you find them. (1 point).
- d) All of the above. (3 points)



Some introduced species become problems in their new homes. In what way(s) do ANS harm native species?

- a) Directly compete for resources like food, water or space. (1 point)
- b) Decrease amount and quality of habitat. (1 point)
- c) Bring diseases with them from native homes. (1 point)
- d) All of the above. (3 points)

What is the primary affect of the invasive Bullfrog?

- a) They tear apart wetland ecosystems as they feed on underwater plants. (0 points)
- b) They compete with other large amphibians for food. (0 points)
- c) They prey upon many native species of frogs and turtles. (3 points)

**BONUS** – the highest percentage of non-native aquatic species found in the United States come from?

- a) Australia. (2%)
- b) Africa. (12%)
- c) Europe. (13%)
- d) South America (22%)

**BONUS** – which group of aquatic organisms has the largest number of non-native introduction in the United States?

- a) Fish. (1)
- b) Plants. (2)
- c) Reptiles. (3)
- d) Amphibians. (4)
- e) Mollusks. (5)

Why are non-native plants brought into the United States?

- a) For medical use. (1 point)
- b) For erosion control. (1 point)
- c) Because they look pretty. (1 point)
- d) To provide a food source. (1 point)
- e) All of the above. (3 points)

Which of the following is a characteristic of the nutria?

- a) Flat beaver like tail. (0 points)
- b) Huge black eyes. (0 points)
- c) Large orange teeth. (3 points).
- d) Webbed front feet. (0 points)

